

Preface

We are delighted to present the second edition of our textbook *Evidence-Based Practice of Critical Care*. It is a bit surprising to realize that it has been 5 years since the first edition was released. It seems as if we finished our editing only a few months ago, and we were grateful to be done. The reception has also been surprising, and again, we are grateful to the many critical care practitioners who have purchased the book and complimented us on its value. What is most surprising of all is the degree to which a new edition is justified. The practice of critical care medicine has changed immeasurably in the past 5 years, and the evidence base that supports care delivery has grown with it. These changes (Chapter 2) make it imperative that the contents of this book also change.

Several basic principles that had only begun to emerge 5 years ago now appear to be more firmly established. Many generate a sense of hope and a belief that care is improving and will continue to do so.

- We may be doing better—but maybe not. Determining if outcomes from critical illness have improved is problematic (Chapter 3), and determining just what has worked and what has not (Chapter 44) may be even more difficult.
- The consistent application of proven interventions is beneficial (Chapter 43), but just what interventions should be applied (and when they should be applied) may be more difficult to determine (Chapters 10, 11, 18–22, 31, 32, 34, 36, 39, 46, 57, 61, 67, 71, 81, and 82).
- Patients survive critical illness but often at a cost (Chapter 3). Survivors may be plagued by debilitating dysfunction in their musculoskeletal and peripheral nervous systems, irreversible respiratory defects, cognitive deficits that hamper performance of the activities of daily living, and psychological abnormalities such as posttraumatic stress disorder and even delirium. Attention has now turned to understanding the problems facing survivors and to generating patient networks to support them.
- Critical illness most often develops outside of the intensive care unit (ICU), and that is where treatment needs to begin. However, success depends on identifying and intervening as early as possible, and not all attempts to make this happen have been successful (Chapter 5). For it to be successful, intervention for vascular disorders such as stroke, myocardial infarction, and cardiac arrest requires early identification of patients, and these patients should be rapidly transported to centers where the appropriate care can be provided by expert practitioners who have access to the most advanced technology (Chapters 22 and 64). New approaches to the definitions of sepsis and acute respiratory distress syndrome (ARDS) have been accompanied by identification of simple clinical criteria that improve our ability to recognize at-risk patients in the hope that we can initiate

management at an earlier point in the natural history of these disorders (Chapters 28 and 37). With earlier initiation of fluids and antibiotic therapy, some at-risk patients may never require care in an ICU.

- Some of the criteria that served as key identifiers of critically ill patients are no longer germane. For example, it is now recognized that the identification of patients who have sepsis with inflammatory markers (e.g., temperature, heart rate, respiratory rate, and white blood cell count, the SIRS [systemic inflammatory response syndrome] criteria) is too nonspecific and identifies a multitude of individuals with infection or other inflammatory disorders who do not have sepsis and whose risk of having sepsis is low. One result is the derivation of new definitions for sepsis and sepsis-related diagnoses and the associated validation of better clinical criteria to better identify patients with infection who are at high risk for mortality and morbidity (Chapter 37).
- Our understanding of the pathophysiology of several key disorders, notably sepsis and ARDS, has improved. Sepsis is no longer viewed in terms of excessive inflammation; it is now recognized that there are aspects of the syndrome that reflect profound immunosuppression (Chapter 38) and others that do not involve immunology at all. Indeed, sepsis may reflect an adaptive response to a profound metabolic defect that cannot, as yet, be identified (Chapter 49). Likewise, our understanding of the effects of critical illness on specific organ systems (Chapters 10, 13, 29, 54, 55, 61, 68, 70, 72, and 81) and the way in which specific organ systems determine the development and course of critical illness (Chapters 15, 27, 50, 51, and 68) has been profoundly altered. Finally, what is “normal” in the absence of critical illness may not be “normal” when critical illness is present and vice versa (Chapters 8, 19, 21, 31, 40, 41, and 52).
- We have come to recognize that host and nonhost factors beyond the acute illness itself determine whether a patient becomes critically ill (Chapters 12, 23, and 78).
- More is not necessarily better, and in some aspects of treatment “more” may be detrimental. Although administration of fluids has been a mainstay of critical care practice since its inception, we now recognize that there are limits that, if exceeded, may make matters worse (Chapters 20, 75, 77, and 81). Overuse of mechanical ventilation is clearly detrimental (Chapters 9 and 10), and it may be best to avoid intubation altogether (Chapter 7). Intervention to maintain blood pressure or other hemodynamic measures is not always indicated (Chapter 41), and, even when appropriate, it is not at all clear when intervention needs to be instituted (Chapter 40).
- Not all of the things we monitor need to be monitored, but we also misuse monitoring tools (Chapters 8, 13, 14, 16, 58, 59, and 61).

- In aggregate, the results of many studies are equivocal, especially when the study results are negative. Examples of trials in which intervention did not significantly alter outcome but where opposite results in different subpopulations negate each other abound. For example, the results of the ALVEOLI/EXPRESS and LOVs trials indicate that use of high positive end-expiratory pressure (PEEP) did not provide a statistically significant benefit over low PEEP in the management of ARDS (Chapter 30). However, in a population of morbidly obese patients, high PEEP is likely essential (Chapter 23). Likewise, the FACTT trial suggested that liberal fluid management offered no measurable benefit over conservative fluid management, a finding that is likely correct, unless the patient has ongoing fluid losses (e.g., bleeding, ascites) that would not be adequately replaced with a conservative approach.

Thus, targeting more specific populations for intervention may be necessary.

- Making the patient an active participant in, rather than a passive recipient of, care in critical illness may be advantageous.

Finally, we would like to thank all of the authors of the chapters in this book. Reading and editing the chapters has been hugely enjoyable and thought provoking, and we finish with the realization that we are only at the beginning of our understanding of critical illness and in the development of critical care. More than anything else, that is what lies behind the excitement we feel as we present this new edition.

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